Revue suisse de Zoologie 119 (3): 269-286; septembre 2012

New Afrotropical species of the genus *Crambus* Fabricius, 1798 (Lepidoptera: Pyralidae, Crambinae)

Graziano BASSI
Via Sant'Agostino 51, I-10051 Avigliana (TO), Italia. E-mail: graziano.bassi@alice.it

New Afrotropical species of the genus *Crambus* Fabricius, 1798 (Lepidoptera: Pyralidae, Crambinae). - Nine Afrotropical species of the genus *Crambus* Fabricius, 1798, are described and illustrated: *C. attis* n. sp., *C. rossinii* n. sp., *C. mozarti* n. sp., *C. berliozi* n. sp., *C. frescobaldii* n. sp., *C. bachi* n. sp., *C. netuncus* n. sp., *C. paris* n. sp., and *C. varii* n. sp.

Keywords: Lepidoptera, Pyralidae, Crambinae, new species, Afrotropical Region.

Nuoveo specie afrotropicali del genere *Crambus* Fabricius, 1798 (Lepidoptera: Pyralidae, Crambinae). - Nove specie afrotropicali del genere *Crambus* Fabricius, 1798, vengono descritte ed illustrate: *C. attis* n. sp., *C. rossinii* n. sp., *C. mozarti* n. sp., *C. berliozi* n. sp., *C. frescobaldii* n. sp., *C. bachi* n. sp., *C. netuncus* n. sp., *C. paris* n.sp. e *C. varii* n. sp.

Parole chiave: Lepidoptera, Pyralidae, Crambinae, nuove specie, Regione Afrotropicale.

INTRODUCTION

Crambus Fabricius, 1798 has, at the end of 2011, 155 described species (Nuss *et al.*, 2012). After my first works on Afrotropical *Crambus* (Bassi, 1986, 1992, 2000), I realized that the creation of infrageneric groups (sub-genera and species groups) was needed but impossible without a full revision of all known world species. An analysis at the generic level is made difficult by the great variability shown in genitalic structure. Thus we need to start from the type species of the genus, *Crambus pascuella* (Linnaeus) to try to better understand the phylogenetic relationships among the species. The male genitalia of this species (Slamka 2008:166, fig. 30; Landry 1995:199, fig. 233) have a peculiar uncus structure; the valva has both costal and saccular processes, and the phallus lacks external teeth and cornuti on the phallus. In female genitalia (Slamka 2008:195, fig. 30) the papillae anales are deeply divided into two lobes and with membranous and speculate dorsal fold, abdominal tergite VIII is wide and sclerotized, the ostium bursae is not produced, there is a peculiar sterigma, the corpus bursae has two signa, and abdominal segment VII has the tergite and especially the sternite very sclerotized and with resistant scales. These features can hardly be found together in other *Crambus* species. The tympanal organs, studied for Crambinae by Landry (1995) and the female spermatheca can also give some information on the

Manuscript accepted 17.05.2012

proximity of the various groups of species and genera, but perhaps only the use of both morphological and molecular characters will resolve the systematics of this genus. In this paper I describe and illustrate some species whose adults are similar to most of the European and North American *Crambus*, with a silvery white stripe on the forewings, and some other species with black (brown) and white forewings, a characteristic that in that area appears in many *Crambus* species, as well as in other genera more or less related, such as *Calamotropha* Zeller, *Argentochiloides* Błeszyński, *Pseudocatharylla* Błeszyński and *Bassiknysna* Kemal & Koçak. I shall indicate in the remarks the obvious sister species and their common characteristics.

MATERIAL AND METHODS

The descriptions are based on all available specimens. The length of the labial palpus is compared to the maximum diameter of the composite eye in side view. I follow Robinson (1976) for dissection genitalia technique and Klots (1970) for terminology. All specimens studied here came from the collections listed in the abbreviations list.

Abbreviations used:

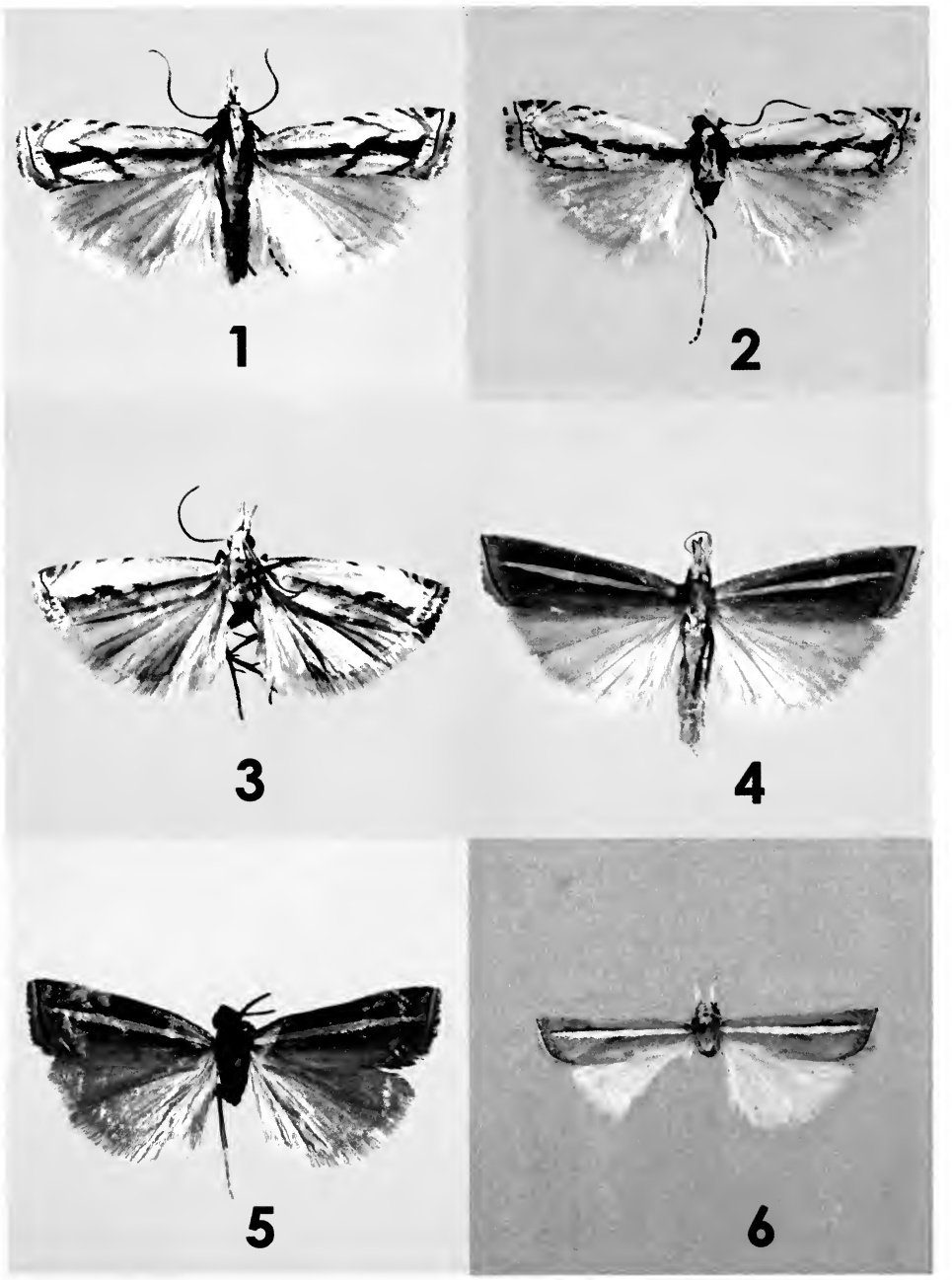
BMNH	Natural History Museum, London.
HNHM	Hungarian Natural History Museum, Budapest.
MHNG	Muséum d'histoire naturelle, Genève.
TMSA	Distong National Museum of Natural History (formerly the Transvaal Museum), Pretoria.
MFNB	Museum für Naturkunde Leibniz-Institut für Evolutions-und Biodiversitätsforschung an der Humboldt-Universität zu Berlin, Berlin.
CB	Bassi collection, Avigliana (Torino).
GS...GB	Genitalia slide.... G. Bassi.
RSA	Republic of South Africa.

SYSTEMATIC PART

Crambus attis n. sp. Figs 1, 11, 14-15

HOLOTYPE: TMSA, without registration number; ♂; [RSA, Mpumalanga, 25°20'S, 30°35'E] Wonderkloof, Powal, 25.I.1939, Coll. Janse, GS 3877 GB, Holotype *Crambus attis* n. sp. G. Bassi det. 1996.

PARATYPES: RSA, MPUMALANGA. - CB, without registration number; 1♂, 1♀; Mt. Sheba; 4.8.II.[19]85; B. Balinsky leg., GS 2860 GB and GS 373 Balinsky. - TMSA, without registration number; 1♀; Graskop, T[rans]v[aa]l; 9.III.1967; Potgieter & Goode, GS 3876 GB. - TMSA, without registration number; 2♀♀; E[ast] Transvaal, Berlin, 300 m. below 25.33 S - 30.43 E; 4.2.1987; E-Y: 2416, UV light collection, leg. Endrödy-Younga. - TMSA, without registration number; 2♀♀; E[ast] Transvaal, Berlin, gorge-edge, 25.32 S - 30.44 E; 4.2.1987; E-Y: 2407, UV light collection, leg. Endrödy-Younga. - TMSA, without registration number; 1♀; T[rans]v[aal], Nelshoogte gallery for[est], below St[aatbos], 25.51 S - 30.53 E; 4.12.1986; E-Y: 2354, UV light collection, leg. Endrödy-Younga. - TMSA, without registration number; 1♀; Pilgrim's Rest., Skea; 26.XI.[19]20; Coll, Janse, GS 3466 GB. - MHNG, without registration number; 2♂♂, Mpumalanga, Waterval-Boven; 28-29.X.2002; st[ation] 11, leg. HW v[an] d[er] Wolf. - RSA, GAUTENG. - MHNG and CB (1♀), without registration number; 3♂♂, 2♀♀; 1000m, Pretoria East, 25°48'S 28°22'E; 09.XI.2004; leg. J. & W. De Prins, GS 5049 GB.



FIGS 1-6

Adults of *Crambus* spp. (1) *C. attis* sp. n., female paratype, RSA, Woodbush Village, wingspan 17. 2 mm. (2) *C. rossinii* sp. n., holotype, wingspan 13.5 mm. (3) *C. paris* sp. n., holotype, wingspan 16.5 mm. (4) *C. mozarti* sp. n., female paratype, Tanzania, E. slopes of Mt. Meru Forestry, wingspan 22 mm. (5) *C. berliozi* sp. n., holotype, wingspan 17 mm. (6) *C. berliozi* sp. n., paratype, wingspan 18.5 mm.

- RSA, LIMPOPO. - TMSA, without registration number; 1 ♀; Haenertsburg; 24.31.XII.1921; C.J. Swiestra. - TMSA, without registration number; 1 ♀; Entabeni Forest; 6.XII.1964; Vári & Potgieter. - CB, without registration number; 1 ♀; Woodb[ush]. Vill[age]; 13.XII.1909; C. J. Swiestra. - RSA, NORTH WEST. - TMSA, without registration number; 1 ♂; Rustenburg, Natuurresrvat; 6.VIII.1975; Potgieter & Scoble. - RSA, FREE STATE. - TMSA, without registration number; 1 ♂; Oranjekrag, H.F. Verwoord Dam; 8-11.XII.1969; J.H. Potgieter. - RSA, KWA-ZULU NATAL. - CB, without registration number; 1 ♀; Royal Natal Nat. Park; 10-12.XII.2004; P. Ustjuzhanin leg. - MFNB, without registration number; 1 ♂; West-Natal, Dragon Peaks Park; 9-12.II.1993; Leg. Mey & Ebert, GS 3943 GB. - CB, without registration number; 1 ♀; Sani Pass road, Mkomazana Mountain Cottages, m. 1600; 28.XI.2011; 29°38' S, 29°26' E, G. Bassi legit. – SWAZILAND. - TMSA, without registration number; 1 ♀; Miller Falls; 10.I.92; N. J. Duke.

OTHER MATERIAL: 1 ♂, not included in type series because without label, TMSA.

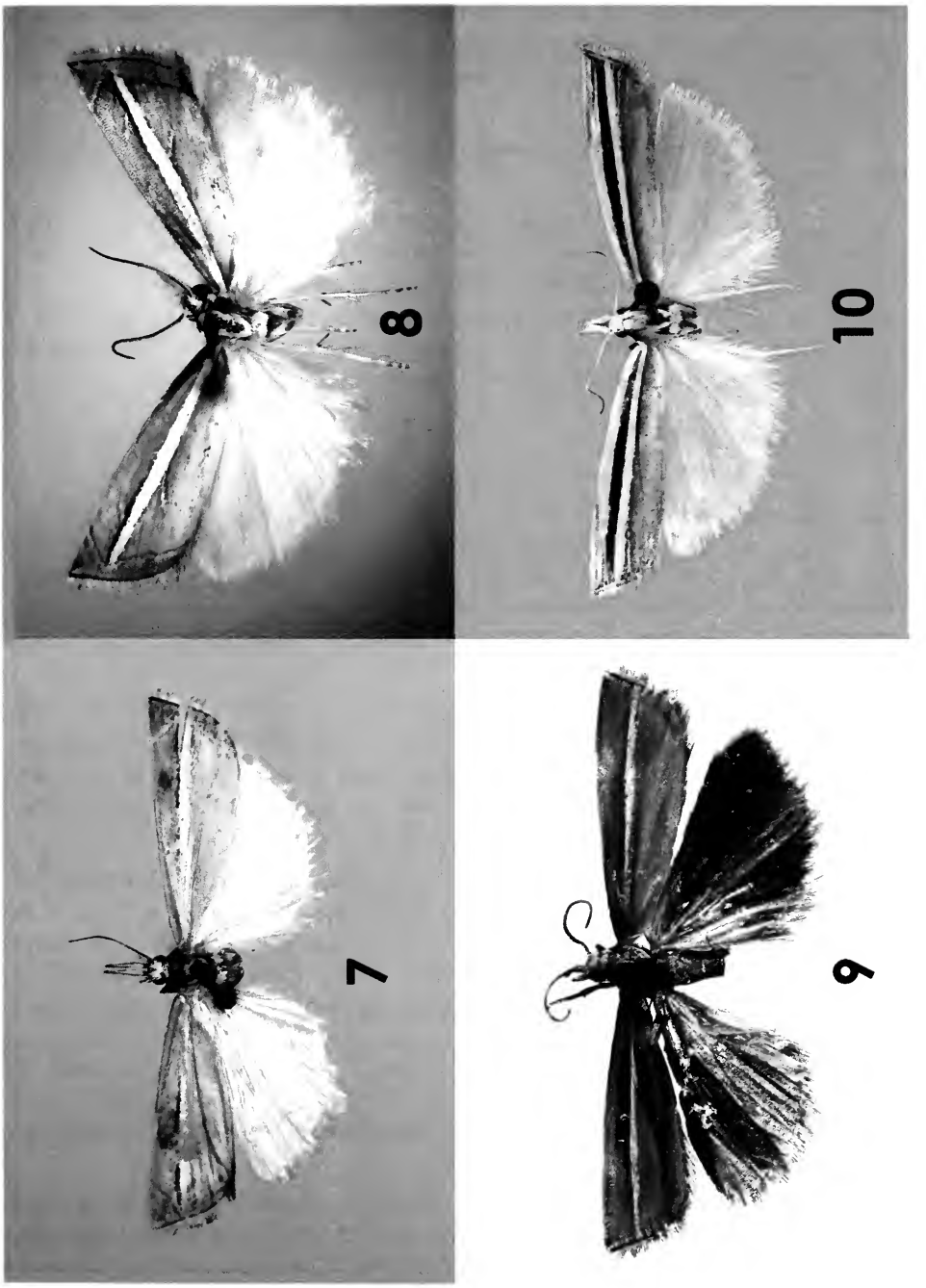
ETYMOLOGY: The specific epithet refers to a Phrygian god of vegetation.

DIAGNOSIS: *Crambus attis*, *C. rossinii*, described below, and *C. proteus* (Bassi & Mey, 2011) are characterized by their similar external appearance and genitalia of both sexes, *C. proteus* usually differing in the more ochreus tinge of the dark scales in forewings coloration, and in genitalia. *C. attis* differs from *C. rossinii* in male genitalia by the shorter valva and larger costal process. In female genitalia the lateral processes of the sterigma are rounded as opposed to elongate in *C. rossinii*.

DESCRIPTION (Fig. 1): Wingspan 14-17 mm. Labial palpi 3 X longer than widest diameter of eye, bronze brown with upper margin white. Maxillary palpi bronze brown with white basis. Frons clearly produced, rounded, white. Antennae bronze brown, serrate in male, slightly thickened in female. Ocelli and chaetosemata present. Head white, bronze brown around chaetosemata. Patagium white in middle, brown laterally. Tegulae brown. Thorax white. Abdomen light brown dorsally, ivory ventrally. Forewings ground color white, with costa with brown scales; apex moderately pointed; with dark brown stripe under cell; medial line usually complete, forming acute angle around end of cell, made of chestnut brown scales that become blackish below cell; subterminal area wide, white, with patch of dark brown scales toward apex, with inner margin bicolored: silvery toward margin and brown toward mid wing; subterminal area crossed by with 4-5 blackish terminal dashes; terminal line black; fringes bronze brown with white basis. Hindwings white with ivory and brownish suffusion, lighter in female; fringes white with ivory suffusion. Forelegs bronze brown; midlegs and hindlegs white with white and brown tarsomeres. Sclerotizations of abdominal segment VIII peculiar, as shown in Figure 11.

MALE GENITALIA (Fig. 11): Uncus thin, with rounded apex. Gnathos much longer than uncus, thin, with apex bent downward. Tegumen subtriangular, as long as gnathos. Vinculum suboval, with moderate dorsal projection. Pseudosaccus well developed. Juxta membranous. Valva short, with narrow cucullus, small mediodistal lamella and large costal process, strongly sclerotized, bent downward and pointed. Phallus as long as whole apparatus, with apex very thin and pointed; vesica without cornuti.

FEMALE GENITALIA (Figs 14-15): Papillae anales divided into two lobes and apophyses posteriores of medium size. Apophyses anteriores reduced to cuticular thickening. Ostium bursae everted, with very complex and sclerotized sterigma, with



FIGS 7-10

Adults of *Crambus* spp. (7) *C. frescobaldii* sp. n., holotype, wingspan 20 mm. (8) *C. bachi* sp. n., holotype, wingspan 15 mm. (9) *C. netuncus* sp. n., holotype, wingspan 20 mm. (10) *C. varii* sp. n., female paratype, RSA, Algeria Forestry, Clanwilliam Distr., wingspan 25 mm.

lamella postvaginalis bilobed and covered with small teeth. Ductus bursae as long as corpus bursae, more wrinkled in proximal third. Ductus seminalis opening in proximal third of ductus bursae. Corpus bursae suboval, with two signa, completely covered with sclerotized scobination.

DISTRIBUTION: RSA (Mpumalanga, Gauteng, Limpopo, North West, Kwa-Zulu Natal, Free State) and Swaziland.

REMARKS: Forewings structure and maculation, male genitalia with gnathos longer than uncus and strong costal process, female genitalia with papillae anales with median fold, subvestigial apophyses anteriores and double signa suggest that *C. attis* complex is closely related with the type species of the genus. The particular shape of the phallus in male genitalia and of the sterigma in female genitalia distinguish this complex of species from all other known *Crambus* species.

Crambus rossinii n. sp. Figs 2, 12-13

HOLOTYPE: TMSA, without registration number; 1♂; [Zimbabwe, 20°54'S, 30°47'E] Lundi, S.[outh] Rh.[odesia]; 13-16.III.1964; Vári & Van Son, Holotype *Crambus rossini* n. sp. G. Bassi det. 1997, GS 3818 GB.

PARATYPES, (all from ZIMBABWE): TMSA, without registration number; 1♀; Lundi; 25.III.1964; Vári & Van Son, GS 3769 GB. - CB, without registration number; 1♂; Lundi, Nuanetsi Dist.; 13.III.1973; D.M. Kroon, GS 4375 GB.

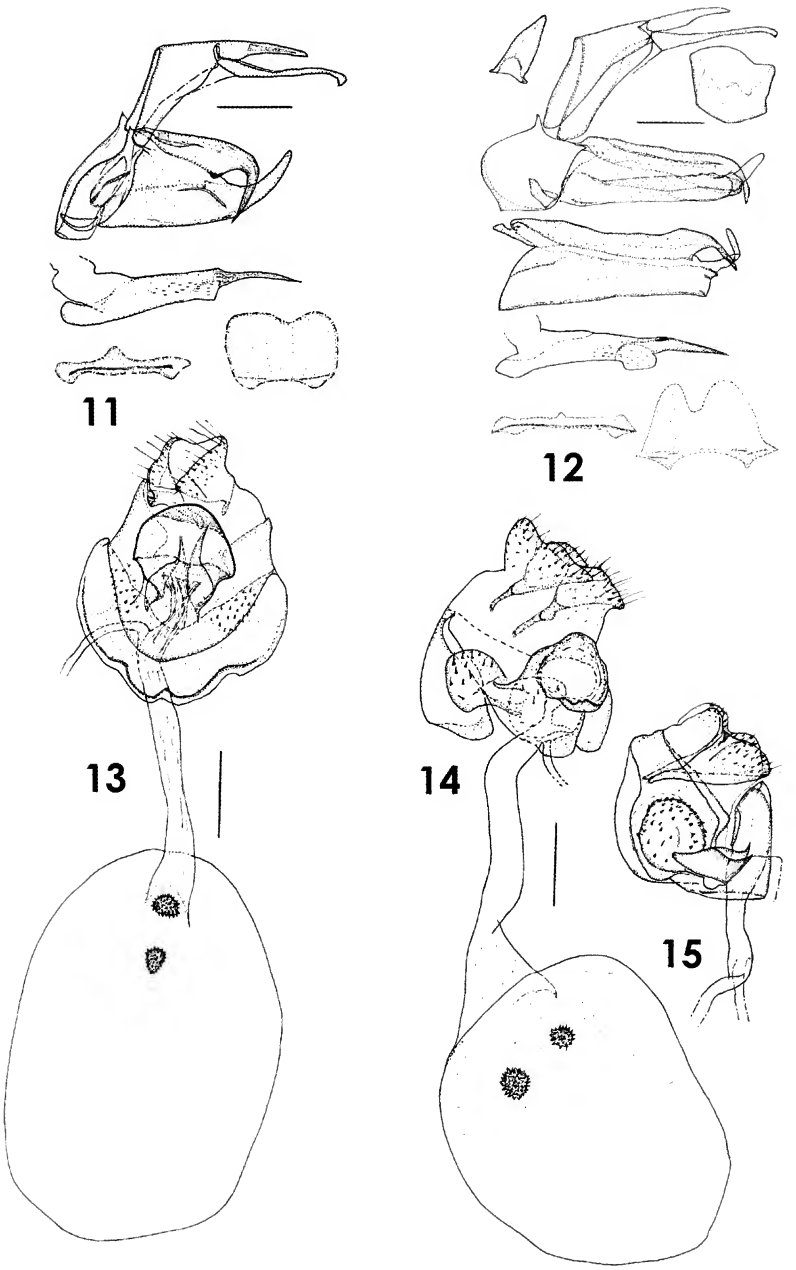
ETYMOLOGY: The species is named after the Italian composer Gioacchino Rossini (1792-1868).

DIAGNOSIS: Forewings ground color is similar to that of *C. attis*, with medial brown stripe less developed, postmedial band not complete in upper area toward apex and terminal dots smaller. In male genitalia the valva is more elongate in *C. rossinii* and the costal process of the valva is narrower and less strongly curved. In female genitalia the lateral processes of the sterigma are narrower.

DESCRIPTION (Fig. 2): Wingspan: ♂ 13.5 mm., ♀ 15 mm. Labial palpi 3 X longer than widest diameter of eye, bronze brown with upper margin white. Frons clearly produced, rounded, white. Antennae: in male serrate, brown; in female thickened, brown with slightly paler costa. Ocelli and chaetosemata moderately deve - loped. Head white, with bronze brown edge around chaetosemata. Patagium white in middle, bronze brown laterally. Tegulae bronze brown. Thorax white. Forewings ground color white, with medial brown stripe poorly developed, postmedial band not complete in upper area toward apex and terminal dots small; fringes whitish. Hindwings white with brownish suffusion; fringes white. Sclerotizations of abdominal segment VIII peculiar, as shown in Figure 12.

MALE GENITALIA (Fig. 12): Uncus thin, with rounded apex. Gnathos much longer than uncus, thin, with apex bent downward and moderately rounded. Vinculum large, with pronounced dorsal extension. Valva elongate, with costal process short and slightly curved. Phallus as long as valva, with pointed tip.

FEMALE GENITALIA (Fig. 13): Papillae anales divided into two lobes and apophyses posteriores of medium size. Apophyses anteriores reduced to cuticular thickening. Ostium bursae everted, with very complex and sclerotized sterigma, with



FIGS 11-15

Male and female genitalia of *Crambus* spp., scale bars 0.5 mm. (11) *C. attis* sp. n., paratype, GS 2860 GB. (12) *C. rossinii* sp. n., holotype, GS 3818 GB and single left valva more pressed, uncus and juxta from the paratype GS 3769 GB. (13) *C. rossinii* sp. n., paratype GS 3769 GB. (14) *C. attis* sp. n., paratype GS 3466 GB. (15) *C. attis* sp. n., paratype GS 5049 GB, lateral view.

lamella postvaginalis laterally covered with small teeth. Corpus bursae with two signa and completely covered with sclerotized scobination.

DISTRIBUTION: The new species is only known from the type locality in South Western Zimbabwe.

Crambus mozarti n. sp. Figs 4, 16, 20

HOLOTYPE: HNHM, without registration number; ♂; Africa, Tanzania, Usa River [3°22'S, 36°51'E], 3900 ft; 19.IV.1965; leg. Dr. Szunyoghy, Holotype *Crambus mozarti* n. sp. G. Bassi det. 1995, GS 3258 GB.

PARATYPES (all from TANZANIA): HNHM, MHNG (1) and CB (1), without registration number; 4♀♀; same data as holotype except 20.IV.1965, GS 3281 and 5228 GB. - HNHM, without registration number; 1♀; idem, 23.IV.1965. - CB, without registration number; 1♀; E. slopes of Mt. Meru forestry 5700 ft.; 12.V.1965; leg. Dr. J. Szunyoghy, GS 5222 GB.

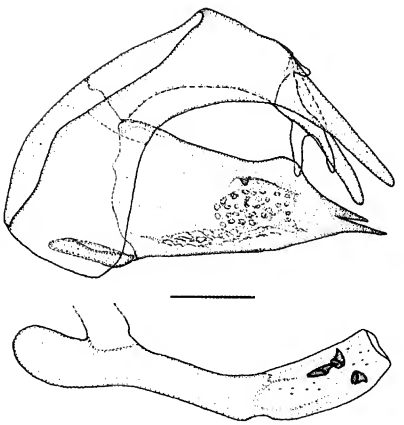
ETYMOLOGY: The species is named after the Austrian composer Wolfgang Amadeus Mozart (1756-1791).

DIAGNOSIS: Forewings with inner lines of subterminal area not angled at cell level. In male genitalia the bilobed pointed tip of the valva separate the species and *C. berliozi* (described below) from the other members of the *mozarti* complex. *C. mozarti* differs in the stronger pedunculi of the tegumen, the lower and more broadly rounded costal extension of the valva, and the larger dorsal apical tooth of the valva. In female genitalia the lateral process of the lamella antevaginalis are longer and narrower than in the other species of the *mozarti* complex. Within the *mozarti* complex this species is also the only one found in Tanzania.

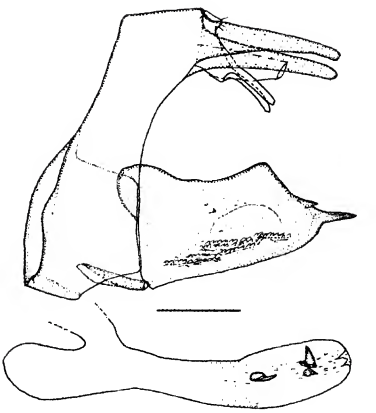
DESCRIPTION (Fig. 4): Wingspan 18-22 mm. Labial palpi 4 X longer than widest diameter of eye, white on inner side and brown on outer side. Frons slightly produced, rounded, white and brown. Male antennae serrate, female antennae simple. Ocelli and chaetosemata well developed. Head laterally bronze brown; medially white. Tegulae bronze brown. Thorax laterally white and medially golden yellow. Abdomen white on first two segments, then ivory, more intense on anal tuft. Forewings golden yellow with costal margin white and large submarginal area with scales white with thick dark brown edge; double golden and silvery inner line curved around the end of the cell; terminal line brown with six small black dots; medial stripe large, silvery white with distal dorsal margin dark brown, reaching inner band of submarginal area; fringes white with outer margin golden yellow. Hindwings white with ivory suffusion; fringes white. Legs bronze brown.

MALE GENITALIA (Fig. 16): Uncus subvestigial and membranous. Gnathos broadly bilobed, poorly sclerotized. Tegumen almost fused with vinculum, with two symmetrical pedunculi longer than gnathos. Vinculum stubby, with slight dorsal extension. Pseudosaccus well developed. Valva concave, with swelling in last third of costa and cucullus sclerotized with two well developed tips. Phallus as long as whole apparatus, vesica with three small cornuti.

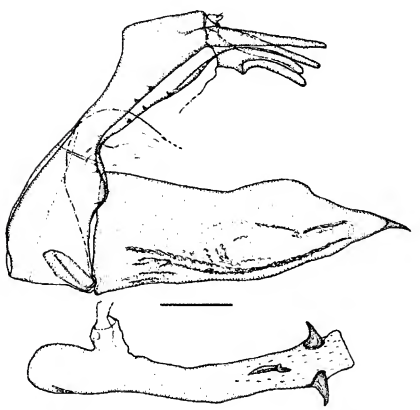
FEMALE GENITALIA (Fig. 20): Papillae anales simple, without medial fold, but with membranous and speculate dorsal fold. Apophyses posteriores medium sized, with bulge apically. Abdominal segment VIII completely membranous except for slight



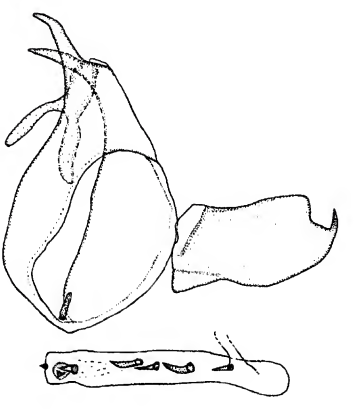
16



17



18



19

FIGS 16-19

Male genitalia of *Crambus* spp., scale bars 0.5 mm. (16) *C. mozarti* sp. n., holotype GS 3258 GB. (17) *C. berliozi* sp. n., holotype GS 3310 GB. (18) *C. bachi* sp. n., holotype GS 5200 GB. (19) *C. netuncus* sp. n., holotype, GS 6545 S. Błeszyński (11335 British Museum).

ventral sclerotization, probably remains of apophyses anteriores. Ostium bursae slightly produced from margin of lamella antevaginalis, trapezioidal with inner part covered with small teeth. Sterigma very complex and strongly sclerotized, with lamella antevaginalis deeply bilobed and narrowing to level of proximal third of ductus, with lamella postvaginalis subtriangular. Ductus bursae 0,5 long as corpus bursae, sclerotized in first third, then corrugated. Ductus seminalis opening distal third of ductus bursae. Corpus bursae suboval, without signa, delicately wrinkled.

DISTRIBUTION: The species is only known from the Arusha area (Mt. Meru slopes) in Northern Tanzania.

REMARKS: In this species and in the following, *C. berliozi*, the sterigma in female genitalia is slightly variable. Based on my previous studies on Crambinae this feature occurs very rarely, as female genitalia are very homogeneous within the same species.

Crambus mozarti and the following, *Crambus berliozi*, *C. frescobaldii*, *C. bachi* and *C. netuncus*, are closely related, as shown by the same external appearance and very similar genitalia of both sexes. I know at least two more new species of this complex from Kenya, not described here because the available material is too rubbed. Despite the great similarity to many common Holarctic *Crambus* (such as *pascuella*) in adult features, the genitalia of both sexes state that this complex of species is quite distinct. The most important characteristics are, in male genitalia, the subvestigial uncus, the bilobed gnathos, the well developed pedunculi, the concave valva with a sclerotized and pointed cucullus. Female genitalia have the papillae anales without a clear median fold, abdominal tergite VIII completely membranous, the ostium bursae sclerotized and opening between well differentiated strong bifurcate lamella antevaginalis and subtriangular lamella postvaginalis, and no real signa. The phallus with external teeth and few little and medium-sized cornuti appears many times in African *Crambus*. Moreover, the papillae with a dorsal membranous fold, subvestigial apophyses anteriores, and a complex ostium bursae area are common characters in many African and Holarctic *Crambus*.

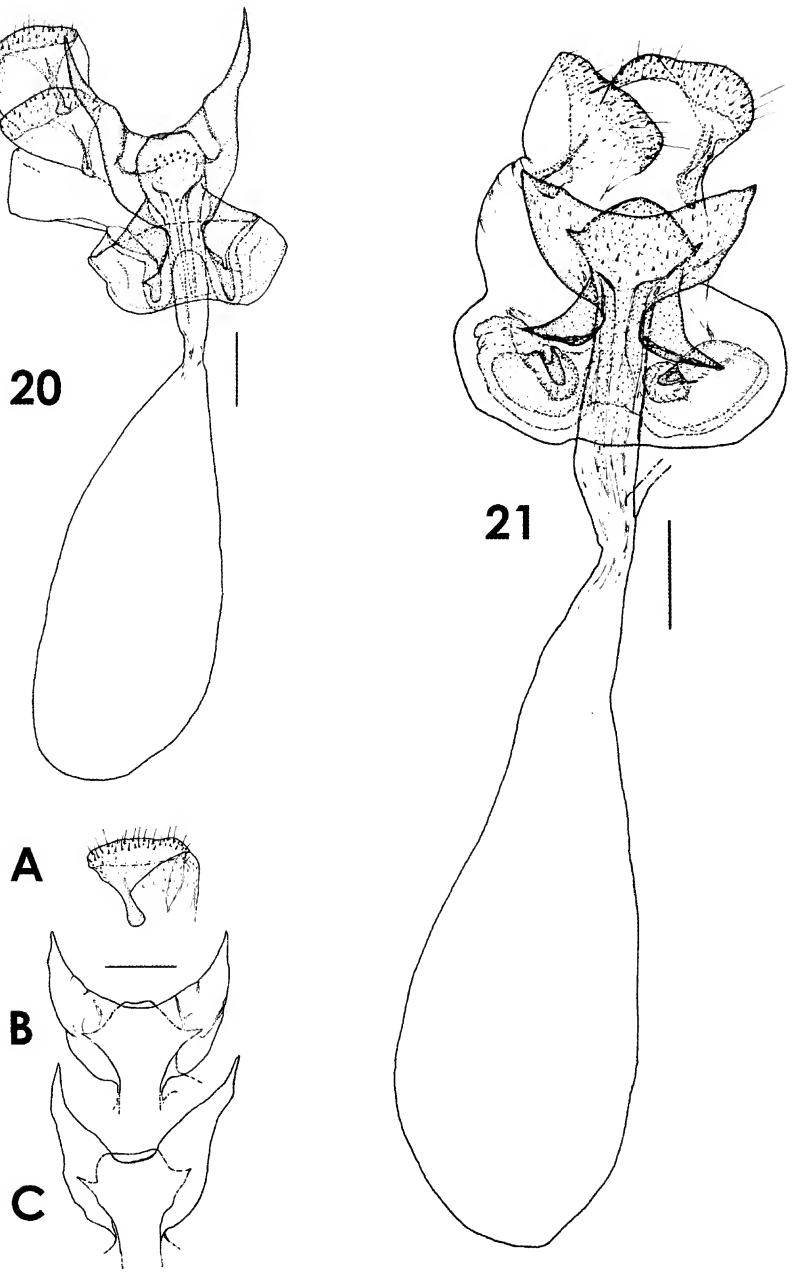
Crambus berliozi n. sp. Figs 5-6, 17, 21, 25

HOLOTYPE: TMSA, without registration number; ♂; [RSA, Kwa-Zulu Natal, 29°46'S, 31°01'E] Effingham Quarries n[ea]r. Durban; 29.VIII.1959; C.G.C. Dickson, GS 3310 GB.

PARATYPES (all from RSA, KWA-ZULU NATAL): TMSA, without registration number; 1♂; Durban Nat[urreservaat]; 17.XI.1955; C.G.C. Dickson, GS 3385 GB. - CB, without registration number; 1♀; Sarnia, Mrs. Curry; 11.'[19]13; Coll. Janse, GS 3980 GB. - TMSA, without registration number; 1♀; K[ar]kloof; 8/10/16; [A.J.T. Janse], GS 3675 GB. - CB, without registration number; 1♀; Cumberland N[ature] R[eserve], 15 Km. N[orth] E[ast] of Pietermaritzburg: 20-22.I.2008; leg. Ustjuzhanin P., GS 5277 GB.

ETYMOLOGY: The species is named after the French composer Hector Berlioz (1803-1869).

DIAGNOSIS: Differs from closely related species, *C. mozarti* and *C. frescobaldii*, in smaller average size (17-20 mm versus 18-22 mm). In male genitalia this species is more similar to *C. mozarti* but the pedunculi of the tegumen are narrower, the costa of the valva has a more strongly developed dorsal extension, and the dorsal apical tooth



FIGS 20-21

Female genitalia of *Crambus* spp., scale bars 0.5 mm. (20) *C. mozarti* sp. n., paratype, GS 3281 GB. (20 A) papilla analis and apophyses posteriores from the paratype GS 5222 GB; (20 B-C): variation in the sterigma from paratypes GS 5222 GB (B) and GS 5228 GB (C). (21) *C. berliozi* sp. n., paratype GS 3675 GB.

of the valva is smaller. In female genitalia the lamella postvaginalis is apically rounded as opposed to truncated or concave in other species of the complex.

DESCRIPTION (Figs 5-6): Wingspan 17-20 mm. Labial palpi 4 X longer than widest diameter of eye, white on inner side, otherwise golden brown. Maxillary palpi white, golden brown on basal half. Frons slightly produced, rounded, white with brown scales. Antennae serrate in male, simple in female, brown with white costa. Ocelli and chaetosemata present. Head white. Patagium laterally golden brown, medially white. Tegulae brown. Thorax whitish suffused yellow, with brown medial line. Forewings with pointed apex; ground color brown; medial silvery stripe with dorsal tooth at about half the length, largely bordered with dark brown scales and reaching inner line of submarginal area; inner submarginal line brown; submarginal area with scales ivory with brown tip; fringes white with ivory basis. Hindwings, including fringes, white. Legs brown.

MALE GENITALIA (Fig. 17): Uncus subvestigial and membranous. Gnathos broadly bilobed, poorly sclerotized. Tegumen narrow, with pedunculi 1,7 X longer than gnathos. valva short with costal swelling strongly produced upward, cucullus with second tooth short. Phallus slightly longer than whole apparatus. Vesica with 2 small and one medium-sized cornuti.

FEMALE GENITALIA (Fig. 21, 25): Papillae anales simple, without medial fold, but with membranous and speculate dorsal fold. Apophyses posteriores medium sized, with bulge apically. Ostium bursae small and rounded, slightly produced from middle of lamella antevaginalis. Sterigma with lamella antevaginalis moderately bifurcate and lamella postvaginalis lightly sclerotized.

DISTRIBUTION: RSA, Kwa-Zulu Natal.

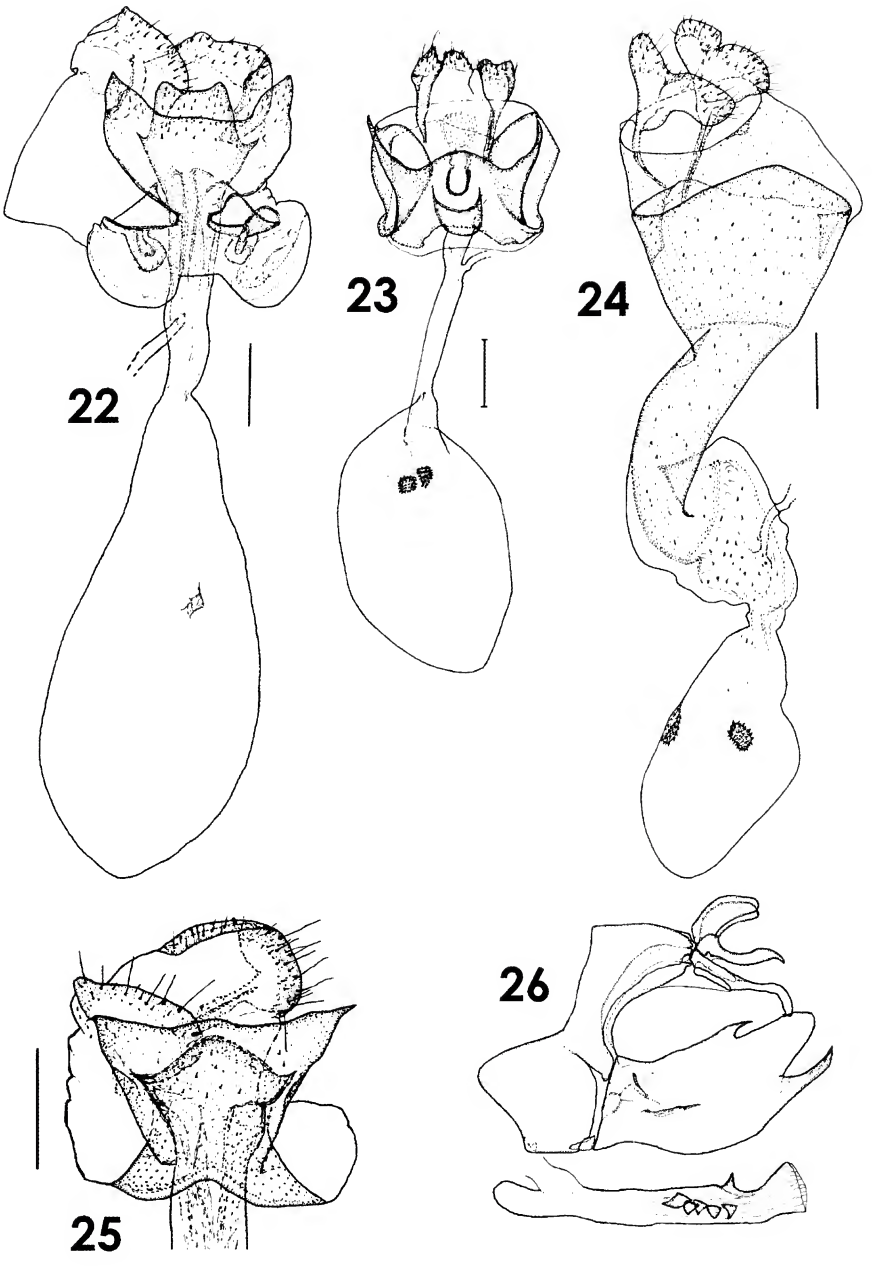
Crambus frescobaldii n. sp. Figs 7, 22

HOLOTYPE: TMSA, without registration number; ♀; [Zimbabwe, 20°27'S, 32°43'E] Mt. Selinda; 8-17.II.1952; H. Cookson, Holotype *Crambus frescobaldii* n. sp. G. Bassi det. 2011, GS 4000 GB.

ETYMOLOGY: The species is named after the Italian composer Girolamo Frescobaldi (1583-1643).

DIAGNOSIS: More yellowish than the other species of the *mozarti* complex. In female genitalia the lamella postvaginalis is apically concave as opposed to truncated or rounded in the other species of the complex.

DESCRIPTION (Fig. 7): Wingspan 20 mm. Palpi 4.5 X longer than widest diameter of eye, white on inner side, bronzed brown with white basis on outer side. Maxillary palpi bronzed brown with white tip. Frons produced, rounded, with brown and white scales. Antennae simple, brown, with costa white on scape and first third of flagellum, otherwise glossy brown. Ocelli and chaetosemata well developed. Head white with small dot of light brown scales in middle. Patagium laterally golden brown, medially white. Tegulae golden brown. Thorax medially white, laterally brown. Forewings golden yellow-brown; costal line brown in basal third, lighter toward apex; subterminal area narrow, wider at apex; terminal line brown with 3-4 terminal dots;



FIGS 22-26

Male and female genitalia of *Crambus* spp., scale bars 0.5 mm. (22) *C. frescobaldii* sp. n., holotype, GS 4000 GB. (23) *C. paris* sp. n., holotype GS 3559 GB. (24) *C. varii* sp. n., paratype GS 3300 GB. (25) *C. berliozi* n. sp., paratype, sterigma complex, GS 3980 GB. (26) *C. varii* sp. n., paratype GS 3330 GB.

fringes white with golden tip. Hindwings white suffused ivory with fringes concolorous. Forelegs bronzed brown with black tip; midlegs broken; hindlegs yellow brown with dorsal side white.

MALE GENITALIA: Unknown.

FEMALE GENITALIA (Fig. 22): Papillae anales simple, without medial fold, but with membranous and speculate dorsal fold. Apophyses posteriores medium sized, with wide bulge apically. Ostium very wide, trapezoidal, clearly producing from lamella postvaginalis. Lamella postvaginalis with upper margin quite concave and with wide arms, narrowing to level of proximal third of ductus. Corpus bursae short, with poorly sclerotized patch that could be a subvestigial signum.

DISTRIBUTION: The new species is only known from the type locality in Zimbabwe.

Crambus bachi n. sp. Figs 8, 18

HOLOTYPE: MFNB, without registration number; ♂; [Ethiopia, 11°33'N, 37°22'E] Äthiopien, Bahar Dar, Lake Tana; 24/25.XII.1979; 1880 m., 4284, Dr. Angenstein M[a]g[de]b[ur]g DDR, GS 5200 GB, Holotype *Crambus bachi* n. sp. G. Bassi det. 2010.

ETYMOLOGY: The species is named after the German composer Johann Sebastian Bach (1685-1750).

DIAGNOSIS: Differs form the other species of the complex by the smaller wingspan (15 mm versus 17-22 mm) and in male genitalia by the longer valva with a single down-curved apical tooth.

DESCRIPTION (Fig. 8): Wingspan 15 mm. Labial palpi 3 X longer than widest diameter of eye, white with wide brown margin on outside ventrally. Frons slightly produced, rounded, brown with long white scales. Antennae serrate, brown with costa white in first third, than golden yellow. Ocelli and chaetosemata well developed. Head white. Patagium white in middle, golden yellow laterally. Tegulae golden yellow. Thorax white. Abdomen white with medial segments suffused brown. Forewings golden brown, with dorsal part lighter, rather grayish white; medial stripe white with dark brown margin from middle to tip, thicker on upper margin and with two teeth, the first, dorsal, under cell, the second, costal over end of cell; submarginal area with scales white with thick dark brown edge and inner line bicolored brown and silvery, angled around cell; terminal line bronze brown without dots; fringes bronze brown with white base. Hindwings white with ivory suffusion; fringes white. Legs brown, with forelegs darker.

MALE GENITALIA (Fig. 18): Pedunculi and tegumen narrow and slender. Valva long and slender with costal swelling slightly pronounced; cucullus with one apical tooth. Phallus as long as valva, with two large subapical teeth; vesica with one small cornutus.

FEMALE GENITALIA: Unknown.

DISTRIBUTION: The new species is only known from the type locality in Ethiopia.

Crambus netuncus n. sp. Figs 9, 19

HOLOTYPE: BMNH, without registration number; ♂; [Ethiopia, 09°43'N, 38°52'E] Abyssinia, near Debra Libanos, ca 8,000 ft.; 31.XII.1926; H. Scott, B[ritish] M[useum] 1927-127, GS 6545 S[tanislaw] B[leszyński] (11335 B[ritish] M[useum]) *Crambus netuncus* Bl. det. Błeszyński, 1969, Holotype *Crambus netuncus* n. sp. G. Bassi det. 1997.

ETYMOLOGY: The new name was used by Błeszyński on a label pinned to the holotype. I am pleased to apply his name to the description of this new taxon. The name refers to the poor development of the uncus.

DIAGNOSIS: Easily distinguishable from the other species of the *mozarti* complex by the dark wing coloration and in male genitalia by the cucullus bent upward and vesica with five cornuti.

DESCRIPTION (Fig. 9): Wingspan 20 mm. Labial palpi 2.5 X longer than widest diameter of eye, rubbed. Frons clearly produced, rounded, white with creamy brown scales. Antennae serrate, brown with silvery costa. Ocelli present. Chaetosemata poorly developed. Head tricolored, white, mostly creamy brown and brown around chaetosemata. Patagium medially white, laterally brown. Tegulae brown with inner margin whitish. Thorax whitish. Forewings bronze brown in costal half, grayish brown in dorsal half; costal margin silvery white in apical third; apex pointed; medial silvery stripe well developed, with bronze brown margins, reaching wing outer margin; submarginal line silvery, angled around cell; subterminal dots 5, small; terminal line bronze brown; fringes white in apex area, then grayish brown. Hindwings translucid, light brown; fringes white suffused brown. Legs bronze brown.

MALE GENITALIA (Fig. 19): Uncus subvestigial and membranous. Gnathos broadly bilobed, poorly sclerotized. Tegumen almost fused with vinculum, with two symmetrical pedunculi as long as gnathos lobes. Vinculum stubby, with slight dorsal extension. Pseudosaccus well developed, narrow. Valva concave with costal swelling rounded; cucullus with one tip bent upward. Phallus clearly longer than valva, with one lateral tooth and one small apical tooth; vesica with 5 medium-sized cornuti.

FEMALE GENITALIA: Unknown.

DISTRIBUTION: The new species is only known from the type locality in Ethiopia.

Crambus paris n. sp. Figs 3, 23

HOLOTYPE: TMSA, without registration number; ♀; [RSA, Kwa-Zulu Natal, 29°24'S, 30°16'E,] Karkloof N.P.; 13-19.XII.[19]'30; AJT Janse, Holotype *Crambus paris* n. sp. G. Bassi det. 1996, GS 3559 GB.

ETYMOLOGY: The species is named after the eponymous character of the Greek mythology, legendary figure of the Trojan War.

DIAGNOSIS: The forewings with a very large white stripe extending to termen will separate the species from other African *Crambus*. In female genitalia the ostium is opening in a membranous area as opposed to opening among sclerotized structures in the other African *Crambus* species.

DESCRIPTION (Fig. 3): Wingspan 16,5 mm. Palpi 3.5 X longer than widest diameter of eye, white on inner side, bronzed brown with white basis on outer side.

Maxillary palpi bronzed brown with white tip. Frons produced, conical with rounded apex, white with few brown scales around eyes. Antennae simple, brown, with costa whitish on scape and first flagellomeres, otherwise glossy bronzed brown. Ocelli and chaetosemata well developed. Head white, brown around chaetosemata. Tegulae bronzed brown. Thorax medially white, laterally brown. Forewings with very wide white median stripe reaching costa and subterminal lines close to termen; costa bronzed brown to chestnut brown towards apex, with two small diagonal brown streaks medially and sub-medially; subterminal line angled, silvery with costal end bordered brown; apical patch rounded, brown; four elongated dots in tornus area; terminal line silvery at tornus, then dark brown and curved at cell level; dorsal area white speckled brown to dark brown toward middle; fringes golden brown with white basis, wider around apex. Hindwings white suffused ivory with fringes concolorous. Forelegs bronzed brown, lighter on inner side of femur; midlegs whitish brown with tarsomeres white and brown; hindlegs whitish and yellow-brown with tarsomeres white and brown.

MALE GENITALIA: Unknown.

FEMALE GENITALIA (Fig. 23): Papillae anales divided into two lobes and apophyses posteriores of medium size. Apophyses anteriores absent. Abdominal segment VIII with narrow tergite and wide rounded and sclerotized sternite. Ostium bursae suboval, lightly sclerotized, opening in membranous area. Sterigma with lamella antevaginalis with wide biconcave upper margin and long and pointed arms, and lamella postvaginalis cup-shaped. Ductus bursae wrinkled, as long as 7/10 of corpus bursae. Ductus seminalis connected in proximal third of ductus bursae. Corpus bursae suboval, spiculate in proximal third, most evidently around two signa.

DISTRIBUTION: The new species is only known from the type locality in RSA.

REMARKS: The structure and maculation of the forewings, the presence in female genitalia of papillae with a median fold, the absence of apophyses anteriores, the complex sterigma and the double signa suggest that this species is close to the *C. attis* complex. In female genitalia the bifurcate shape of lamella antevaginalis is reminiscent of some *Chrysoteuchia* Hübner species, but in the latter ostium bursae directly opens in the middle of the bifurcate process while in paris ostium bursae is membranous and placed between well differentiated and bifurcate lamella antevaginalis and cup-shaped lamella postvaginalis. This feature could mean that this species is close to the *C. mozarti* complex, but only the discovery of the male will clarify the problem.

Crambus varii n.sp. Figs 10, 24, 26

HOLOTYPE: TMSA, without registration number; ♀; [RSA, Western Cape, 33°57'S, 22°32'E] Saasveld George, C[ape] P[rovince], South Africa, H. Geertsema; 26.8.1964; Holotype *Crambus varii* n. sp. G. Bassi det. 1995, TMSA, (not dissected).

PARATYPES (all from RSA): TMSA, without registration number; 1 ♀; same data as holotype. - TMSA, without registration number; 1 ♀; idem, 2.2.[19]65 - TMSA, without registration number; 1 ♀; idem, 1-10.II.1965. - TMSA, without registration number; 1 ♀; idem, 5.I.1965. - TMSA, without registration number; 1 ♂; idem, 26.XII.1964. - TMSA, without registration number; 1 ♂; idem, 1.1.1965. - TMSA, without registration number; 1 ♀; idem, 16.9.1964, De Fin. - TMSA, without registration number; 1 ♂; Kogelberg C[ape] P[rovince], Nature Reserve;

6-13.III.1983; Kroon & Molekane, GS 3330 GB. - TMSA, without registration number; 1♂; Cape Prov[ince], Kogelberg (34 18 BD), 23 Mar[ch] 1981, D.M. Kroon, GS 4193 GB. - TMSA, without registration number; 1♂; Stellenbosch; 3.3.'[19]21; Ch. K. Brain. - TMSA, without registration number; 1♂; 1♀, Vyeboom, Caledon Distr[ict]; 10.II.1954; L. Vári, GS 3300 GB. - TMSA, without registration number; 1♀; Saasveld; 5.I.[19]65. - MFNB, without registration number; 2♀♀; RSA, Bontebok NP, Swellendam; 14.16.XI.1993; leg. Mey & Ebert. - CB, without registration number; 1♂; Saasveld, C.P.; 23.XII.1964; H. Geertsema, GS 5235 GB. - CB, without registration number; 1♀; Algeria Forestry, Clanwilliam Distr.; 4-10.III.1969; Potgieter & Strydom, GS 5240 GB. - MHNG, without registration number; 1♀, Worcester, Amandel spruit; 18.X.1966; Vári & Potgieter. – TMSA and CB (1♂), without registration number; 2♂♂; 2♀♀, Tsitsikam[m]a Goesabos Forestry; 13-22.III.1979; Potgieter & Scoble. - TMSA, without registration number; 1♀; Cape Prov[ince], Tsitsikam[m]a forest, Goesabos, 33 23 DD; 13-22 Mar 1979; J. Potgieter & M. Scoble, GS 3850 GB. - TMSA, without regis - tration number; 1♀; Tsitsikam[m]a, Ou-brug; 17.III.1979; Potgieter & Scoble.

ETYMOLOGY: The species is dedicated to Lajos Vári of the TMSA, author of very valuable entomological collections in Southern Africa.

DIAGNOSIS: The combination of forewings without separated submarginal area, male genitalia with fully developed uncus, phallus with dorsoapical tooth and strong cornuti, and female genitalia with very large and strongly sclerotized ostium characterize this species among African *Crambus*.

DESCRIPTION (Fig. 10): Wingspan: male 20-21 mm, female 25-27 mm. Labial palpi 4 X longer than widest diameter of eye, with inner side white and outer side brown with upper margin and tip white. Maxillary palpi white with brown basis. Frons clearly produced, rounded, white. Antennae brown, with silvery costa, serrate in male, simple in female. Ocelli and chaetosemata moderately developed. Head white, with few chestnut brown scales in middle. Patagium laterally brown, white medially. Tegulae dark brown. Thorax white. Abdomen bronze brown to whitish, suffused brown. Forewings ground color bronze brown, lighter in dorsal area; costal area white, wide, and white suffused with chestnut brown toward apex; female with more pointed apex; medial stripe wide, white, reaching outer margin; veins marked by white scales toward outer margin; outer margin with seven subterminal dots, more developed in female; fringes with both short and long scales white with silvery bronzed tip, thus appearing white with medial and terminal lines silvery bronzed. Hindwings white with brown suffusion; fringes white. Fore and midlegs bronze brown; hindlegs whitish, suffused bronze brown.

MALE GENITALIA (Fig. 26): Uncus long, sinuous, pointed, moderately bent downward and sclerotized. Two large and spatulate socii cover up to two thirds of length of uncus. Gnathos one third longer than uncus, with apex rounded and bent downward. Tegumen with large base, partially fused with vinculum. Vinculum stout, with large subtriangular dorsal extension. Pseudosaccus small. Valva wide, with membranous cucullus, with well developed and pointed costal and saccular processes and small medial process lamellar. Phallus slightly shorter than whole apparatus, with large subapical tooth; vesica with 5 subtriangular cornuti.

FEMALE GENITALIA (Fig. 24): Papillae anales divided into two lobes and apophyses posteriores of medium size. Apophyses anteriores absent. Abdominal segment VIII with narrow tergite and strong and complex sternite. Ostium bursae very

large and sclerotized. Ductus bursae longer than corpus bursae, sinuous, sclerotized in proximal two thirds, then fibrous. Ostium and ductus bursae spiculate. Ductus seminalis opening in distal third of ductus bursae. Corpus bursae with two well developed signa.

DISTRIBUTION: RSA, Western Cape and Eastern Cape at Tsitsikamma.

REMARKS: The presence of socii and both costal and saccular processes relates this species to *C. pascuella*; female genitalia are also reminiscent of some other *Crambus*, such as *heringiellus* Herrich-Schäffer.

ACKNOWLEDGEMENTS

I wish to thank all those who, by loans and gifts of material and often offering precious advice, have promoted the increase of my knowledge on the Crambinae: K. Tuck and M. Shaffer (†), BMNH; Dr L. Gozmany (†), HNHM; Dr. B. Landry, MHNG; Dr. M. Krüger, TMSA; Prof. U. Parenti, Department of Animal Biology of the University of Turin; Dr. W. Mey, MFNB; Dr. P. Ustjuzhanin, Novosibirsk, Russia, Dr. G. Baldizzone, Asti. A particular thank to Dr. B. Landry, MHNG for revising the English text and for his friendly help.

REFERENCES

BASSI, G., 1986. Contributo allo studio delle Crambinae (Lepidoptera, Pyralidae). II: Nuove specie africane. *Bollettino del Museo Regionale di Scienze Naturali Torino* 4 (2): 537-541.

BASSI, G., 1992. Contributi alla conoscenza delle Crambinae (Lepidoptera, Crambidae). VII: Note sulle specie africane di Crambus Fabricius presenti nel Muséum National d'Histoire naturelle di Parigi. *Bollettino del Museo Regionale di Scienze Naturali Torino* 10 (2): 221-235.

BASSI, G., 2000. Revisione delle specie afrotropicali del genere Crambus. II: il gruppo tenuistriga e descrizione di due nuove specie dei gruppi ellipticellus e averroellus (Lepidoptera Pyralidae). *Bollettino della Società Entomologica Italiana* 132 (3): 249-258.

BASSI, G. & MEY, W., 2011. Crambidae Crambinae (Lepidoptera, Pyraloidea). *In*: Mey W., Basic pattern of Lepidoptera diversity in southwestern Africa. *Esperiana Memoir* 6: 234-243.

KLOTS, A. B., 1970. Lepidoptera (pp. 115-130). *In*: Tuxen S.L. (ed.). Taxonomist's glossary of genitalia in insects (2nd Edition). *Munksgaard, Copenhagen*.

LANDRY, B., 1995. A phylogenetic analysis of the major lineages of the Crambinae and of the genera of Crambini of North America (Lepidoptera Pyralidae). *Memoirs on Entomology, International, Gainesville*. Vol. 1. 245 pp.

NUSS, M., LANDRY, B., VEGLIANTE, F. TRÄNKNER, A. MALLY, R. HAYDEN, J., SEGERER, A., LI, H., SCHOUTEN, R., SOLIS, M. A., TROFIMOVA, T., DE PRINS, J. & SPEIDEL, W. 2003-2012: Global Information System on Pyraloidea. – www.pyraloidea.org

ROBINSON, G. S., 1976. The preparation of slides of lepidoptera genitalia with special reference to the Microlepidoptera. *Entomologist's Gazette* 27: 127-132.

SLAMKA, F., 2008. Pyraloidea of Europe, Volume 2 (Lepidoptera): Crambinae and Schoenobiinae. *František Slamka ed. Bratislava*, 244 pp.